

EXHIBITIONS AND NOTICES.

May 8th, 1923.

Dr. A. SMITH WOODWARD, F.R.S., Vice-President,
in the Chair.

The SECRETARY exhibited, and made remarks upon, a series of photographs of Big Game from Choma, North Rhodesia.

Miss L. E. CHEESMAN, F.E.S., F.Z.S., exhibited, and made remarks upon, (1) living specimens of *Peripatus* from Trinidad and (2) a section of a nest of the Stingless Bee from Australia.

Mr. F. MARTIN DUNCAN, F.R.M.S., F.Z.S., gave an account of some of the results of his recent work on the microscopic structure of Mammalian hairs, with especial reference to the hairs of the Primates, and illustrated his remarks with a series of photomicrographs taken to demonstrate the character of the cuticular scales.

May 29th, 1923.

Dr. A. SMITH WOODWARD, F.R.S., Vice-President,
in the Chair.

The SECRETARY read the following Report on the Additions to the Society's Menagerie during the month of April, 1923:—

The registered additions to the Society's Menagerie during the month of April were 367 in number. Of these 90 were acquired by presentation, 50 were deposited, 215 were purchased, and 12 were born in the Menagerie.

The following may be specially mentioned:—

2 Adult male Lions (*Felis leo*), from Nairobi, presented by Major-General Sir Edward Northey, K.C.M.G., C.B., F.Z.S., on April 9th.

2 Common Wombats (*Phascodomys mitchelli*), from Australia, and 2 Tasmanian Devils (*Sarcophilus harrisi*), from Tasmania, purchased on April 20th.

2 Superb Glossy Starlings (*Spreo superbus*) and 1 Abyssinian Barbet (*Trachyphonus margaritatus*), from North-East Africa, new to the Collection, presented by Mr. Alfred Ezra, O.B.E., F.Z.S., on April 15th.

A collection of animals from Gambia, presented by H.E. Capt. C. H. Armitage, C.M.G., D.S.O., F.Z.S., consisting of a Wart-Hog, 6 Guinea Baboons, Marabou Storks, &c.

A small collection of birds from Colombia, presented by Mr. W. K. Pomeroy, F.Z.S., containing 2 Prince Albert's Curassows and several Tanagers.

A Tail-lined Tree-Snake, *Dendrelaphis caudolineatus*, and an Iridescent Snake, *Xenopeltis unicolor*, from Singapore, both new to the Collection, presented by the Singapore Natural History Society.

Dr. G. M. VEYERS, F.Z.S., exhibited, under microscopes, a series of preparations of the parasitic Protozoon *Balantidium coli*, and described a case of Balantidiosis in a Brazilian Tapir now in the Society's Gardens.

Prof. J. P. HILL, F.R.S., Vice-President, exhibited a series of photographs of the Australian Lung-Fish (*Ceratodus*) and of the rivers which it inhabits, and drew attention to the urgent need for effective protection of this rare Vertebrate.

Dr. N. S. LUCAS, F.Z.S., exhibited, and made remarks upon, a mucous cyst from the frontal sinus of a Cercopitheque.

Mr. C. TATE REGAN, M.A., F.R.S., exhibited lantern-slides of photographs of the Spotted Basking Shark (*Rhinodon typicus*), and made the following remarks:—

The first of these photographs represents a specimen 38 feet long captured by Captain Charles Thompson off Miami, Florida, in 1912. It was set up by a taxidermist, mounted on a truck, and taken round for exhibition. At the time certain American newspapers published stories about it that were not strictly accurate, and to the effect that it was a monster unknown to science that had been blown up from the depths by a volcano, etc., etc. The second photograph represents a *Rhinodon* about 30 feet long, which was run into by a large steamship off the coast of Brazil and was carried along for several hours, with the anterior $\frac{1}{4}$ of the body on one side of the bows and the rest on the other; when the vessel stopped it floated free and sank (cf. Gudger, Natural History, xxiii. p. 62, New York, 1923). Mr. Regan also exhibited some deep-sea fishes taken by the 'Dana' expedition, under the leadership of Dr. Johannes Schmidt. This expedition cleared up the life-history of the Common Eel (*Anguilla vulgaris*), but it also accomplished much other work of great importance. The fishes exhibited belong to the very rare and little-known genera *Gigantura* and *Stylophorus*, which agree in having telescopic eyes placed close together and directed forwards. One *Gigantura* had swallowed a *Chauliodus* considerably larger than itself.

June 12th, 1923.

Sir S. F. HARMER, K.B.E., F.R.S., Vice-President,
in the Chair.

The SECRETARY read the following Report on the Additions to the Society's Menagerie during the month of May, 1923 :—

The registered additions to the Society's Menagerie during the month of May were 214 in number. Of these 149 were acquired by presentation, 32 were deposited, 22 were purchased, 2 were received in exchange, and 9 were born in the Menagerie.

The following may be specially mentioned :—

2 Elephants (*Elephas maximus*), from Burma, presented by Dr. Saw Po Min on May 16th.

A collection purchased from the Soudan Government on May 14th, consisting of 1 female Giraffe (*Giraffa camelopardalis*), 1 Wart-Hog (*Phacochoerus africanus*), 4 Arabian Bustards (*Eupodotis arabs*), and 2 Northern Secretary-Birds (*Serpentarius serpentarius gambiensis*).

2 Abyssinian River-Hogs (*Potamochoerus hassama*), new to the Collection, purchased on May 5th.

Mr. D. SETH-SMITH, F.Z.S., and Dr. P. H. MANSON BAHR, D.S.O., F.Z.S., exhibited photographs and sketches, and made remarks upon, the display of Hunstein's Magnificent Bird-of-Paradise (*Diphyllodes magnifica hunsteini*).

Miss ALYSE CUNNINGHAM exhibited, and made remarks upon, a Cinematograph record of the Gorilla "John."

Mr. E. G. BOULENGER, F.Z.S., exhibited and described models for the rockwork for the Society's new Aquarium, made by Miss JOAN B. PROCTER, F.Z.S.

Mrs. NEALE exhibited a living Tree-Hyrax (*Dendrohyrax dorsalis*).

Dr. H. A. BAYLIS, F.Z.S., exhibited, and made remarks upon, a Nematode Worm, *Toxascaris leonina*, from the Domestic Cat.

Pituitary Gland and Axolotl Metamorphosis.

Mr. E. A. SPAUL, F.Z.S., exhibited specimens showing the metamorphosis of axolotls induced by injection of pituitary gland anterior lobe extract, and made the following remarks :—

Recent studies on the relationship between amphibian metamorphosis and endocrine organs have demonstrated the significant rôle of both the thyroid and pituitary glands. The acceleration of the metamorphosis of tadpoles to frogs when fed with thyroid

tissue and the failure of thyroidless tadpoles to change until given either thyroid diet or iodine, followed by the conversion of axolotls to salamanders by thyroid diet, showed conclusively the importance of the thyroid and thyroid iodine. Although pituitary diet does not induce metamorphosis in either tadpoles or axolotls, pituitaryless tadpoles fail to transform, whilst axolotls injected with extract from the anterior lobe of the pituitary gland assume adult characters as rapidly as individuals treated with thyroid, which is evidence in favour of the significance of the anterior lobe of the pituitary in metamorphic changes.

The results of experiments briefly outlined here show that the anterior lobe contains an active principle functioning in a definite manner in metamorphosis. Previously only young axolotls had been used, but larger specimens, in some cases beyond that size at which they change in normal environment, were taken, and by tri-weekly injections caused to transform to adults. The rate of metamorphosis depended on the size of the animal and the temperature. The first signs of change appeared much later in the older specimens, but providing the dose was sufficient the process was more rapid. Within two or three weeks of the first injection the change begins and is usually complete by the 40th day in medium size or the 48th day in the oldest types under suitable conditions of temperature. The limits of the latter are 22°–24° C., when the animal remains quite normal throughout the experiment. Low temperature retarded the change, and if too high the animal became sluggish, refusing food, with no noticeable increase in the rate of change.

The approximate limits of the minimal dose were found, but it was not possible to give any relation between the minimal dose within these limits and the weight, as the complexity of the factors, both internal and external, made the production of identical conditions each time, and hence uniformity, impossible. The limits were .5 grs. of fresh gland per .5 c.c. injection for small individuals to 1.5 grs. for full-grown animals.

Weights and measurements were taken on days alternating with those upon which injections were made throughout the period of the experiment, but no increase in growth was noted, only a decrease. This does not deny the growth-promoting properties of the anterior lobe, for the animals used were adult and sexually mature, so that reduction previous to metamorphosis was to be expected.

Having ascertained these details, the change resulting from the injection of the anterior lobe extract was applied as a biological test in the examination of the purity and strength of commercially prepared extracts. Quantities up to 1/10 of a clinical dose could be tested in this manner. Of twelve so tested only one successfully brought about the change, although as many as 20 injections were made. The dose was the same in each case, the quantity stated by the manufacturer being taken as a basis and equivalent to the minimal dose as found in previous experiments,

The cause of failure was probably due either to loss of potency during process of manufacture or presence of impurities having an inhibitory effect. As regards the first, the strength of the dose was doubled with no result, so that it was not a question of quantity. The only impurity, apart from those accumulating in process of preparation (a very small amount, if present), and investigation of which was beyond the scope of this work, was the posterior lobe of the gland. The difficulty in separation of the two lobes in dissection and diffusion of active principles during dissection would account for its presence.

It has recently been shown that there is a pigmentation factor located in the posterior lobe, and by its action on the frogs' melanophores a quantitative estimation can be made by determining that concentration which just gives a response. This method was successfully applied here and the quantity of posterior lobe in each extract calculated.

Further, many animals treated refused food, the water in the container became cloudy, smelling of urine, and some eventually died, after becoming greatly distended with fluid, which was found to contain 2.1 per cent. of urea. As the symptoms were the same in each case, and occurred only in specimens injected with extracts and not controls, the cause must have been the same, and introduced by the extract. Therefore the factor was apparently contained in the posterior lobe and responsible for inhibition of activity of anterior lobe secretion. It was possible to compare roughly the amounts present by judging effects on specimens.

On comparing these observations with the results obtained from the pigmentation work, the respective amounts in each extract did not correspond, which seems to show that there were two factors at least which were not identical—the one controlling pigmentation response of the melanophores and the other associated in some way with the flow of urine and inhibiting action of anterior lobe. It is doubtful whether the pigmentation factor itself had any such action.

In conclusion, it can be seen that the anterior lobe extracts as at present manufactured are not pure, containing posterior lobe, which may completely mask metamorphic action of anterior lobe, although a small quantity has no effect. The varying amount in which it may be present shows consistent composition and is not maintained in manufacture. Again, the stated amounts of gland present in commercially prepared extracts is not to be relied upon, as tested by this method.